



UNIFORM BUILDING CODE COMMISSION

Report to the Utah Legislature
Business and Labor Interim Committee

August 16, 2017

Report to the Business and Labor Interim Committee regarding adoption of Construction Codes Under Title 15A State Construction and Fire Code Act proposed by the Uniform Building Code Commission

In accordance with 15A-1-204(4), The Uniform Building Code Commission (UBCC) is submitting the following report which is divided into two parts: Part 1 – Proposed Building Codes and Amendment Changes which have been recommended by the UBCC and its advisory committees. It should be noted that the changes are made with strikethrough and underline as if making changes to existing statutes which have adopted the current building codes. This format is used for easier identification of items that are recommended for changes. Part 2 – Summary and cost analysis of the changes proposed in Part 1.

Recommended changes to Construction Codes Under Title 15A State Construction and Fire Code Act Proposed by the Uniform Building Code Commission

Part 1

15A-3-302 Amendments to Chapters 1 and 2 of IPC.

- (1) A new IPC, Section 101.2.1, is added as follows: “For clarification, the International Private Sewage Disposal Code is not part of the plumbing code even though it is in the same printed volume.”
- (2) In IPC, Section 202, the definition for “Backflow Backpressure, Low Head” is deleted.
- (3) In IPC, Section 202, the following definition is added: “Certified Backflow Preventer Assembly Tester. A person who has shown competence to test Backflow prevention assemblies to the satisfaction of the authority having jurisdiction under Utah Code, Subsection 19-4-104(4).”
- (4) In IPC, Section 202, the following definition is added: “Contamination (High Hazard). An impairment of the quality of the potable water that creates an actual hazard to the public health through poisoning or through the spread of disease by sewage, industrial fluids or waste.”
- (5) In IPC, Section 202, the definition for “Cross Connection” is deleted and replaced with the following: “Cross Connection. Any physical connection or potential connection or arrangement between two otherwise separate piping systems, one of which contains potable water and the other either water of unknown or questionable safety or steam, gas, or chemical, whereby there exists the possibility for flow from one system to the other, with the direction of flow depending on the pressure differential between the two systems (see “Backflow”).”
- (6) In IPC, Section 202, the following definition is added: “Deep Seal Trap. A manufactured or field fabricated trap with a liquid seal of 4” or larger.”
- (7) In IPC, Section 202, the definition for “Essentially Nontoxic Transfer Fluid” is deleted and replaced with the following:
“ESSENTIALLY NONTOXIC TRANSFER FLUID. Fluids having a Gosselin

- rating of 1, including propylene glycol; and mineral oil.”
- (8) In IPC, Section 202, the definition for “Essentially Toxic Transfer Fluid” is deleted and replaced with the following:
 “ESSENTIALLY TOXIC TRANSFER FLUID. Soil, waste, or gray water; and any fluid that is not an essentially nontoxic transfer fluid under this code.”
- (9) In IPC, Section 202, the following definition is added: “High Hazard. See Contamination.”
- (10) In IPC Section 202, the following definition is added: “Injection well. A bored, drilled, or driven shaft whose depth is greater than the largest surface dimension; or a dug hole whose depth is greater than the largest surface dimension; or an improved sinkhole: or a subsurface fluid distribution system the primary purpose for which is the subsurface emplacement of fluids. Injection wells are subject to the regulations of the Utah Underground Injection Control Program, Utah Administrative Code R317-7. Injection wells associated with single family residences are not subject to R317-7.”
- (40)(11) In IPC, Section 202, the following definition is added: “Low Hazard. See Pollution.”
- (44)(12) In IPC, Section 202, the following definition is added: “Pollution (Low Hazard). An impairment of the quality of the potable water to a degree that does not create a hazard to the public health but that does adversely and unreasonably affect the aesthetic qualities of such potable water for domestic use.”
- (42)(13) In IPC, Section 202, the definition for “Potable Water” is deleted and replaced with the following: “Potable Water. Water free from impurities present in amounts sufficient to cause disease or harmful physiological effects and conforming to the Utah Code, Title 19, Chapter 4, Safe Drinking Water Act, and Title 19, Chapter 5, Water Quality Act, and the regulations of the public health authority having jurisdiction.”

Amended by Chapter 249, 2016 General Session

15A-3-304 Amendments to Chapter 4 of IPC.

- (1) In IPC, Table 403.1, the following changes are made:
- (a) The title for Table 403.1 is deleted and replaced with the following: “Table 403.1, Minimum Number of Required Plumbing Fixtures^{a, h}”;
 - (b) In row number “3”, for “E” occupancy, in the field for “OTHER”, a new footnote g is added.
 - (c) In row number “5”, for “I-4 Adult day care and child day care” occupancy, in the field for “OTHER”, a new footnote g is added.
 - (d) A new footnote f is added as follows: “FOOTNOTE: f. When provided, in public toilet facilities, there shall be an equal number of diaper changing facilities in male toilet rooms and female toilet rooms. Diaper changing facilities shall meet the requirements of ASTM F2285-04 (2010) Standard Consumer Safety Performance Specifications for Diaper Changing Tables for Commercial Use.”
 - (e) A new footnote g is added to the table as follows: “FOOTNOTE g: Non-residential child care facilities shall comply with the additional requirements for sinks in administrative rule made by the Department of Health.”
- (2) A new IPC, Section 406.3, is added as follows: “ 406.3 Automatic clothes washer safe pans. Safe pans, when installed under automatic clothes washers, shall be

- installed in accordance with Section 504.7.”
- (3) A new IPC, Section 412.5, is added as follows: “412.5 Public toilet rooms. All public toilet rooms in A & E occupancies and M occupancies with restrooms having multiple water closets or urinals shall be equipped with at least one floor drain.”
 - (4) IPC, Section 423.3, is deleted.
 - (5) A new IPC, Section 412.6 is added as follows: "Prohibition of Motor Vehicle Waste Disposal Wells - Injection wells such as floor drains, septic systems, French drains, dry wells, etc. that discharge to the subsurface are prohibited if vehicular service and/or maintenance activities involving vehicular fluids and associated fluids occur within the catchment area of the injection well."

Amended by Chapter 249, 2016 General Session

15A-3-206 Amendments to Chapters 37, 39, 44, and Appendix F of IRC.

- (1) In IRC, Section E3705.4.5 the following words are added after the word “assemblies”
“with ungrounded conductors 10 AWG and smaller.”.

- ~~(4)~~(2) In IRC, Section E3901.9, the following exception is added:

"Exception: Receptacles or other outlets adjacent to the exterior walls of the garage, outlets adjacent to an exterior wall of the garage, or outlets in a storage room with entry from the garage may be connected to the garage branch circuit."

- ~~(2)~~(3) IRC, Section E3902.16 is deleted.

- ~~(3)~~(4) In Section E3902.17:

- (a) following the word "Exception" the number "1." is added; and (b) at the end of the section, the following sentences are added:
 - "2. This section does not apply for a simple move or an extension of a branch circuit or an outlet which does not significantly increase the existing electrical load. This exception does not include changes involving remodeling or additions to a residence."

- ~~(4)~~ (5) IRC, Chapter 44, is amended by adding the following reference standard:

Standard reference number	Title	Referenced in code section number
USC-FCCCHR 10th Edition Manual of Cross Connection Control	Foundation for Cross-Connection Control and Hydraulic Research University of Southern California Kaprielian Hall 300 Los Angeles CA 90089-2531	Table P2902.3"

- ~~(5)~~(6)

- (a) When passive radon controls or portions thereof are voluntarily installed, the voluntary installation shall comply with Appendix F of the IRC.
- (b) An additional inspection of a voluntary installation described in Subsection (5)(a) is not required.

15A-2-103 Specific editions adopted of construction code of a nationally recognized code authority.

- (1) Subject to the other provisions of this part, the following construction codes are incorporated by reference, and together with the amendments specified in Chapter 3, Part 3, Statewide Amendments to International Plumbing Code, and Chapter 4, Local Amendments Incorporated as Part of State Construction Code, are the construction standards to be applied to building construction, alteration, remodeling, and repair, and in the regulation of building construction, alteration, remodeling, and repair in the state:
- (a) the 2015 edition of the International Building Code, including Appendix J, issued by the International Code Council;
 - (b) the 2015 edition of the International Residential Code, issued by the International Code Council;
 - (c) the 2015 edition of the International Plumbing Code, issued by the International Code Council;
 - (d) the 2015 edition of the International Mechanical Code, issued by the International Code Council;
 - (e) the 2015 edition of the International Fuel Gas Code, issued by the International Code Council;
 - (f) the ~~2014~~ 2017 edition of the National Electrical Code, issued by the National Fire Protection Association;
 - (g) the 2015 edition of the International Energy Conservation Code, issued by the International Code Council;
 - (h) the 2015 edition of the International Existing Building Code, issued by the International Code Council;
 - (i) subject to Subsection 15A-2-104(2), the HUD Code; subject to Subsection 15A-2-104(1), Appendix E of the 2015 edition of the International Residential Code, issued by the International Code Council; and
 - (j) subject to Subsection 15A-2-104(1), the 2005 edition of the NFPA 225 Model Manufactured Home Installation Standard, issued by the National Fire Protection Association.
- (2) Consistent with Title 65A, Chapter 8, Management of Forest Lands and Fire Control, the Legislature adopts the 2006 edition of the Utah Wildland Urban Interface Code, issued by the International Code Council, with the alternatives or amendments approved by the Utah Division of Forestry, as a construction code that may be adopted by a local compliance agency by local ordinance or other similar action as a local amendment to the codes listed in this section.

Amended by Chapter 249, 2016 General Session

Statewide Amendments to National Electrical Code

15A-3-601 General provisions.

The following are adopted as amendments to the NEC to be applicable statewide:

- (1) The IRC provisions are adopted as the residential electrical standards applicable to installations applicable under the IRC. All other installations shall comply with the adopted NEC.
- (2) In NEC, Section 210.8(B), the words “and three phase receptacles rated 150 volts to ground or less, 100 amperes or less”, are deleted.
- (3) NEC, Section 210.71 is deleted.
- (4) In NEC, Section 240.67, the words “January 1, 2020” are deleted and replaced with “upon adoption of the 2020 NEC”.
- (2) ~~NEC, Section 240.87(B), is modified to add the following as an additional approved equivalent means:~~
 - ~~"6. — An instantaneous trip function set at or below the available fault current."~~

Amended by Chapter 249, 2016 General Session

Part 2

Summary/Cost analysis for recommended changes proposed by the Uniform Building Code Commission to Construction Codes Under Title 15A State Construction and Fire Code Act

Summary/Cost Analysis – Proposed Amendment to 2015 International Plumbing Code

15A-3-302 At the request of the Department of Environmental Quality, the UBCC is recommending statewide amendments to the 2015 International Plumbing Code (IPC) to incorporate the requirements of the Underground Injection Control (UIC) Program (UAC R317-7) regarding fluid disposal to the subsurface via injection wells. Discharge of fluids into individual or single family residential waste disposal systems is specifically excluded from regulation under the UIC rules at 40 CFR 144.1(g)2. There are a variety of fluid discharge practices that have been banned by the United States EPA which are addressed in the UIC program. It is necessary to now amend the 2015 IPC to reference the ban and other requirements of the UIC program. **THERE IS NO COST OR SAVINGS ATTACHED TO THIS AMENDMENT.**

Summary/Cost Analysis - Proposed Amendment to 2015 International Residential Code

15A-3-206. The UBCC is recommending this amendment to the 2015 International Residential Code (IRC) Section E3705.4.5 to make it consistent with the 2017 National Electric Code (NEC) which amends this section so that larger feeders are permitted to be sized in accordance with the 75 degree C ampacity when installed in thermal insulation. **SAVINGS: Approximately \$100-\$200 per home as the current IRC requires larger feeder cables at a much higher cost.**

Summary/Cost Analysis - Proposed Adoption of 2017 National Electric Code

15A-1-2-103. The UBCC Electrical Advisory Committee extensively studied the 2017 National Electric Code throughout the course of the interim. The committee made its recommendation to the UBCC to adopt the 2017 NEC with statewide amendments as outlined in this report. The UBCC is now recommending to the Legislature the adoption of the 2017 NEC with statewide amendments. Adoption of the code addresses new technology advances and will update the electrical industry to incorporate the available technology. The 2017 NEC also provides increased welfare and safety of electrical workers and the public by incorporating additional safety requirements.

The following sections represent an analysis which determines the most significant costs and/or savings due to changes in the 2017 National Electric Code.

1. 110.16: Marking of services 1200 amperes and larger with clearing time of service overcurrent protective devices. This will require the cost of approximately one hour of engineering time to determine the clearing time. **COST: Approximately \$100.00-\$150.00 per hour for each commercial project.**

2. 210.5(C)(1) Exception: The new exception will allow existing electrical systems to remain identified as they were installed and not be re-marked when new systems are installed. **SAVINGS: This could save many hours of labor, ranging from \$100.00 to \$10,000.00 based upon the size of the structure and hours required to re-mark the electrical system.**

3. 210.8(B): GFCI protection of 208 and 240 volt single phase circuits up to 60 amps. **COST: Between \$60.00 and \$120.00 per circuit. Each commercial project could contain between one and as many as 15 circuits.**

4. 210.8(B): Utah amendment to remove from the 2017 NEC GFCI Protection of three phase circuits 150 volts to ground and less 100 amps and less. Amendment is further detailed in this report. **SAVINGS: \$ 800.00 to \$3,200.00 for GFCI relays per circuit based upon size required. Each commercial project could contain between one and as many as 10 circuits.**

5. 210.12(B): AFCI expansion in dormitories to include bathrooms. **COST: Approximately \$35.00 per dormitory room.**

6. 210.12(C): AFCI expansion to guest rooms in hotels and motels. **COST: \$140.00 to \$175.00 per guest room or guest suite.**

7. 210.64: removes the requirement for a 120 volt receptacle from electric service areas outdoors and for services for driven irrigation machinery. **SAVINGS: Between \$100.00 and \$500.00 for a typical outdoor service area and could be a cost savings of \$1,000.00 to \$5,000.00 for irrigation pivots where a transformer would be necessary to derive a 120 volt circuit.**

8. 210.71: Utah amendment to remove the requirement for receptacles in meeting rooms. Many meeting rooms are already designed with receptacles to meet this requirement, with floor boxes being the main cost. Amendment is further detailed in this report. **SAVINGS: \$100.00 to \$2,000.00 per meeting room, based upon size.**

9. 220.12 Exception #2: This new exception will allow office buildings to be designed with a reduced lighting load of 1 VA per square foot when buildings are designed in accordance with the IECC. This is a significant cost savings which will reduce the size of electrical services. **SAVINGS: As much as \$10,000.00 + on those commercial buildings with main breaker electrical services.**

10. 240.67 Utah amendment: New requirement for Arc Energy Reduction for fuses. Requires that a means be required to reduce incident energy for fuses rated 1200 amperes or higher. Amendment is further detailed in summary of this report. **SAVINGS: \$2,500.00 per device with each building having one to two devices per design.**

11. 240.87: 2 new methods for reducing arcing energy for circuit breakers will provide a cost effective method for reducing arcing energy. **SAVINGS: As much as \$10,000.00 per device with each building having one or two devices per design.**

12. 310.15(B)(3)(c): Removal of the adjustment factors for conductors installed on a roof top will result in smaller conductors being used. **SAVINGS: Anywhere from a few cents per foot of conductor to a few dollars per foot depending upon the size of the conductors. This would apply to most commercial jobs.**

13. 310.15(B)(7): Allowing three phase services to use the 83% reduction in conductor sizing for main power feeders and service entrance conductors. **SAVINGS: Approximately \$1.00 per foot of conductor. This applies to commercial apartment buildings with three phase services.**

14. 338.10(B)(4)(a): The reduction in conductor sizing that is required to be sized in accordance with the 60 degree C column of Table 310.15(B)(16) will result in smaller conductor sizes. **SAVINGS: \$1.00 per foot. This section is the basis of the proposed amendment to the 2015 International Residential Code. This would apply both to residential homes and commercial apartment buildings.**

15. 555.3: The expansion of 30 mA ground fault protection to all overcurrent protective devices in marinas and boatyards. **COST: GFPE devices cost between \$60.00 and \$120.00. Each individual boat dock contained within a marina or boatyard would be required to have a GFPE device.**

16. 590.4(B) & (C): The allowance for NM and SE cable used as temporary wiring methods for feeders and branch circuits will result in a cost savings due to the inexpensive cost of these

wiring methods instead of using MC Cable or other wiring methods. **SAVINGS: \$0.50 to \$2.00 per foot of cable. This applies to the temporary construction phase of a commercial project.**

17. 695.15: Requirement for Surge Protective device on fire pumps. **COST: Approximately \$2,000.00 per pump. This applies to large commercial buildings where fire sprinklers are not adequate; i.e., hospitals.**

18. 700.3(F): Requirement for provisions to connect a temporary power source to an emergency generator for maintenance. This will require an additional transfer switch with provisions for connecting a portable generator to the building. This will effect only those emergency systems that utilize an emergency generator. **COST: Approximately \$10,000.00 for applicable emergency systems found in large commercial buildings.**

Summary/Cost Analysis - Proposed Adoption of Statewide Amendments to 2017 National Electrical Code

15A-3-601. NEC Section 210.8(B) This Utah amendment removes the requirement for three phase receptacles 150 volts to ground or less to be GFCI protected. This will allow manufacturers to have more time to create a more cost effective means of providing GFCI protection for three-phase 150 volts to ground or less circuits. **SAVINGS: Currently the only equipment available to GFCI protect a three phase circuit is a ground fault relay system which can cost upwards of \$3,500.00.**

15A-601. Delete NEC Section 210.71 which is a new requirement for floor box receptacles in meeting rooms. The UBCC is recommending deletion of this section of the 2017 NEC determining it is an unnecessary cost to impose on individuals/business owners who can make that determination based upon need and without a code requirement. **SAVINGS: \$100.00 to \$2,000.00 per meeting room based upon size.**

15A-3-601. NEC, Section 240.67. Requirement to provide means to reduce incident energy for fuses rated 1200 amperes or higher. The Utah amendment changes the effective date of this requirement to allow for manufacturers to adjust equipment to comply. This will result in a significant cost savings as installers will not have to comply with this requirement using costly alternatives and will allow time for manufacturers to adjust their equipment to be able to meet the specifications. **SAVINGS: \$2,500.00 per device with each building having one to two devices per design.**

15A-3-601 NEC, Section 240.87(B). The UBCC is recommending deleting this section of the Utah state amendments which adds an instantaneous trip function set at or below the available fault current as an additional approved equivalent means. It has been incorporated into the 2017 NEC and is no longer necessary as a state amendment. **SAVINGS: As much as \$10,000.00 per device with each building having one or two devices per design.**